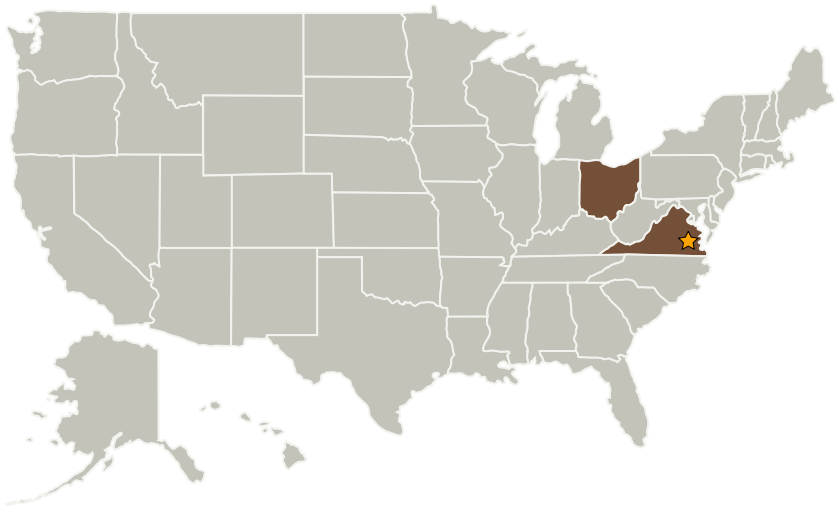
Design and Preliminary Evaluation of the r-Gamma Display Concept, Phase II

Completed Technology Project (2004 - 2006)

Project Introduction

The objective of this proposed Phase II SBIR effort is to continue Phase I efforts to develop and assess the feasibility of an innovative new flight instrument proposed to replace the traditional Turn Coordinator (or Turn-and-Slip Indicator) currently found in most general aviation (GA) aircraft. The primary innovation is the inclusion of climb-dive information and gyroscopic heading, in addition to the turn-rate information now available, in one low-cost display. In essence, this new "r-Gamma" display concept will "fuse" flight information on one display that the pilot must now gather and correlate from among five separate indicators whenever the aircraft experiences loss of the Attitude Indicator (AI) and the Heading Indicator (HI) due to vacuum system or gauge failure. The innovative technology that makes this concept feasible and affordable, with a projected cost similar to that of today's Turn Coordinator, is derived from a technique recently developed and flight tested by our firm under an SBIR contract that involved tracking the flightpath of a small USAF sensor vehicle. We firmly believe this concept has the potential to improve significantly the safety of emergency "partial-panel" flight operations in GA aircraft.

Primary U.S. Work Locations and Key Partners



Design and Preliminary Evaluation of the r-Gamma Display Concept, Phase II

Table of Contents

Project Introduction 1
Primary U.S. Work Locations and Key Partners 1
Organizational Responsibility 1
Project Management 2
Technology Areas 2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

Design and Preliminary Evaluation of the r-Gamma Display Concept, Phase II

Completed Technology Project (2004 - 2006)

Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
NTI, Inc.	Supporting Organization	Industry	Fairborn, Ohio

Primary U.S. Work Locations	
Ohio	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.6 Advanced Atmospheric Flight Vehicles